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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,344	12/22/2000	Karl J. Molnar	8194-464	9250
20792	7590	05/04/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			ELALLAM, AHMED	
PO BOX 37428				
RALEIGH, NC 27627			ART UNIT	PAPER NUMBER
			2662	

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/747,344

Applicant(s)

MOLNAR, KARL J.

Examiner

AHMED ELALLAM

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 33-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,7,15,17,20,33,39,40,45,46,48,50 and 52 is/are rejected.
- 7) ☒ Claim(s) 2,4-6,8-14,16,18,19,34-38,41-44,47,49,51 and 53 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/27/2004
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1, 3, 15, 17, 33, 39, 40, 45, 46, and 48 are rejected under 35

U.S.C. 102(e) as being anticipated by Sano et al, US (6,246,735).

Regarding claim 1, with reference to figure 9, Sano discloses a method for processing a received signal, the method comprising:

Receiving a signal across a plurality of time slot periods, the signal having predetermined synchronization symbol group inserted therein, see column 4, line 13-29; (claimed receiving the signal across a plurality of time slot intervals, respective ones of the plurality of time slot intervals having a plurality of symbol positions associated therewith to provide a sequence of symbols associated with the received signal in respective ones of the plurality of symbol positions);

Determining an average electric power value for each symbol period, see column 4, line 13-29, and lines 53-56. (Claimed determining an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions), and

Determining a null section based on the calculated average power value of each predetermined period in the electric power value of the received signal, see column 4, lines 13-52. (Claimed determining whether the respective one of

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the plurality of symbol positions contains a fixed symbol based on the average value determined for the respective one of the plurality of symbol positions).

Regarding claim 3, Sano discloses determining average values across the plurality of time slot intervals for respective ones of the plurality of symbol positions, see column 4, line 13-29, and lines 53-56, and

Determining a null section based on the calculated average power value of each predetermined period in the electric power value of the received signal, see column 4, lines 13-52. (Examiner interpreted this feature of null symbol detection within the received signal based on the average electric power value for each symbol period as being the claimed "determining whether the respective ones of the plurality of symbol positions contain fixed symbols based on the average values determined for the respective ones of the plurality of symbol positions and wherein the method further comprises determining whether the received signal contains fixed symbols corresponding to a predefined symbol sequence", because the null section is a predefined symbol sequence).

Regarding claim 15, with reference to figure 9, Sano discloses a method for processing a received signal, the method comprising:

Receiving a signal across a plurality of time slot periods, the signal having predetermined synchronization symbol group inserted therein, see column 4, line 13-29, (claimed receiving the signal across a plurality of time slot intervals, respective ones of the plurality of time slot intervals having a plurality of symbol positions associated therewith to provide a sequence of symbols associated with the received signal in respective ones of the plurality of symbol positions);

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Determining an average electric power value for each symbol period, see column 4, line 13-29, and lines 53-56. (Claimed determining an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions), and

Determining a null section based on the calculated average power value of each predetermined period in the electric power value of the received signal, see column 4, lines 13-52. (Claimed determining whether the received signal contains symbols corresponding to a predefined symbol sequence based on the average values determined for the respective ones of the plurality of symbol positions).

Regarding claim 17, Sano discloses determining average values across the plurality of time slot intervals for respective ones of the plurality of symbol positions, see column 4, line 13-29, and lines 53-56, and

Determining a null section based on the calculated average power value of each predetermined period in the electric power value of the received signal, see column 4, lines 13-52. (Examiner interpreted this feature of null symbol detection within the received signal based on the average electric power value for each symbol period as being the claimed "determining whether the respective ones of the plurality of symbol positions contain fixed symbols based on the average values determined for the respective ones of the plurality of symbol positions and determining whether the received signal contains fixed symbols corresponding to a predefined symbol sequence", because the null section is a predefined symbol sequence).

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Regarding claim 33, with reference to figure 9 and 14, Sano discloses a communication apparatus comprising:

A controller 10, (figure 9) that is responsive to a received sequence of symbols associated with a signal received across a plurality of time slot intervals, (the controller interpreted as being the claimed fixed information detection unit), see column 4, lines 13-52, the controller comprising:

A level decision unit 14 (figure 9) comprising an average electric power calculator, unit 6, figure 15, (the average electric power calculator is interpreted as being the claimed averaging unit) that generate an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions responsive to the received signal, see column 4, lines 13-52, and column 10, lines 19-22.

Amplitude decision unit (unit 12, figure 9), that generate a signal S12 that is outputted to a null section detector 19 for detecting a null section responsive to the average value generated for respective one of the plurality of symbol periods, see column 10, lines 37-42, see also figure 18 and column 13, lines 19-63. (Examiner interpreted the outputted signal to the null section for determining a null symbol(s) based on the received power average across symbol periods as being the claimed control signal that identifies whether the respective one of the plurality of symbol positions contains a fixed symbol responsive to the average value generated for the respective one of the plurality of symbol positions).

Regarding claims 39 and 45, Sano discloses received signal over a wireless communication network, and the receiving apparatus is a mobile. See

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column 1, lines 49-53. (claimed received signal is a communication signal received over a wireless communication network and the communication apparatus is one of a mobile terminal and a base transceiver station).

Regarding claim 40, with reference to figure 14 and 18, Sano discloses a communication apparatus comprising:

A synchronization detection unit (figure 18) that is responsive to a received sequence of symbols associated with a signal received across a plurality of time slot intervals, (the synchronization detection unit interpreted as being the claimed fixed information detection unit), the synchronization detection unit comprising:

A level decision unit 14 (figure 18) comprising an average electric power calculator, unit 6, figure 18, (the average electric power calculator is interpreted as being the claimed averaging unit) that generate an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions responsive to the received signal, see column 4, lines 13-52, and column 10, lines 19-22.

A null section detector 19, (claimed known information detection unit) that examine an output from the level detection unit in determining whether a null symbol(s) period exist on the received signal in response to the average values generated for the respective one of the plurality of received symbols, the signal resulting from the examination is supplied to sync detector 22. See column 13, lines 21-63. (Examiner interpreted the outputted signal from the null section detector 19 as being the claimed output signal indicative of whether the received

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signal contains fixed symbols). (Claimed known information detection unit that generates an output signal indicative of whether the received signal contains fixed symbols corresponding to a predefined symbol sequence responsive to the average values generated for the respective ones of the plurality of symbol positions).

Regarding claim 46, with reference to figure 9 and 14, Sano discloses a communication apparatus comprising:

A controller 10, (figure 9) that received sequence of symbols associated with a signal received across a plurality of time slot intervals, (the controller interpreted as being the claimed means for receiving a signal across a plurality of time slot intervals, respective ones of the plurality of time slot intervals having a plurality of symbol positions associated therewith to provide a sequence of symbols associated with the received signal in respective ones of the plurality of symbol positions), see column 4, lines 13-52,

A level decision unit 14 (figure 9) comprising an average electric power calculator, unit 6, figure 15, that generate an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions responsive to the received signal. See column 4, lines 13-52, and column 10, lines 19-22. (The average electric power calculator is interpreted as being the claimed means for determining an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions),

Amplitude decision unit (unit 12, figure 9), in combination with a null section detector 19, for detecting a null section responsive to the average values



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generated for respective one of the plurality of symbol periods, see column 10, lines 37-42, see also figure 18 and column 13, lines 19-63. (Claimed means for determining whether the respective one of the plurality of symbol positions contains a fixed symbol based on the average value determined for the respective one of the plurality of symbol positions).

Regarding claim 48, with reference to figure 9 and 14, Sano discloses a communication apparatus comprising:

A controller 10, (figure 9) that received sequence of symbols associated with a signal received across a plurality of time slot intervals, (the controller interpreted as being the claimed means for receiving a signal across a plurality of time slot intervals, respective ones of the plurality of time slot intervals having a plurality of symbol positions associated therewith to provide a sequence of symbols associated with the received signal in respective ones of the plurality of symbol positions), see column 4, lines 13-52.

A level decision unit 14 (figure 9) comprising an average electric power calculator, unit 6, figure 15, that generate an average value across the plurality of time slot intervals for a respective one of the plurality of symbol positions responsive to the received signal. See column 4, lines 13-52, and column 10, lines 19-22. (The average electric power calculator is interpreted as being the claimed means for determining average values across the plurality of time slot intervals for respective ones of the plurality of symbol positions),

Amplitude decision unit (unit 12, figure 9), in combination with a null section detector 19, for detecting a null section responsive to the average values

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generated for respective one of the plurality of symbol periods, see column 10, lines 37-42, see also figure 18 and column 13, lines 19-63. (Claimed means for determining whether the received signal contains symbols corresponding to a predefined symbol sequence based on the average values determined for the respective ones of the plurality of symbol positions).

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato in view of Davis at al, US (6,611,563).

Regarding claims 50 and 52, claims 50 and 52 are computer program product for processing a received signal corresponding to respective method claims 1 and 15. As discussed above with reference to respective claims 1 and 15, Sato discloses a method having all the limitations steps of claim 50 and 52, except it doesn't disclose implementing these methods using computer readable program codes for implementing the methods.

However, Davis discloses implementing in the same field of endeavor of symbol detection and averaging, a method that can be embodied in computer readable program code within a computer readable storage medium for

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implementing various steps in carrying out the invention. See column 7, lines 1-34.

It would have been obvious to an ordinary person of skill in the art, at the time the invention was made to embody the steps of method claims 1 and 15 in a computer readable storage having computer readable program code as taught by Davis so that Sano invention can be implemented using a software, a person of skill would be motivated to do so by recognizing the benefits of software implementations such as the ease of updating and portability (i.e. portable compact disk).

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano in view of Harada et al, US (6,115,435).

Regarding claim 7, Sano discloses all the limitation of parent claim 6, except it doesn't specify associating the symbols with soft information value.

However, Harada discloses associating symbols with soft information value, see column 1, lines 47-61.

Therefore, it would have been obvious to an ordinary person of skill in the art, at the time the invention was made to associate the received symbols of Sano with soft information values as taught by Harada so that multilevel demodulation can be provided. The advantage would be the ability of Sano system to be more prone to errors in recovering transmitted data. (Harada, col. 1, lines 8-34).

5. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano.

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Regarding claim 20, Sano discloses the calculation of the average electric power value is performed every N times of a symbol period, over a predetermined symbol period within a time frame. See column 4, lines 53-56, and column 5, lines 7-14.

Sano does not specify that the predetermined symbol period is N, wherein N is not greater than three. However, it would have been obvious to an ordinary person of skill in the art, at the time the invention was made to modify the predetermined symbol period over which the average power value is performed, a person would be motivated to do so by recognizing a need to have average sampling in accordance with the interference level present during the transmission of the received signal.

### ***Allowable Subject Matter***

6. Claims 2, 4, 5, 6, 8-14, 16, 18, 19, 34-38, 41-44, 47,49, 51 and 53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Petranovich, US (5,524,127); Langberg et al, US (5,748,686); Vasic, US (6,178,194); Hendrickson, US (6,275,519); Aramaki, US (6,370,134); Nishimura, US (6,493,360); Ling et al, US (6,633,552); Abeta et al,

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US (6,647,003); Nomura, US (6,731,702); Kaasila et al, US (6,717,934); Aldaz et al, US (6,754,503); Kawai, US (6,760,360); Soderkvist et al, US (6,771,628); Iwariki, US (6,795,488); and Benidict et al, US (6,842,438).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AHMED ELALLAM whose telephone number is (571) 272-3097. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kizou Hassan can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AHMED ELALLAM  
Examiner  
Art Unit 2662



HASSAN KIZOU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600